



LIFE NORTHERN BALD IBIS

REINTRODUCTION OF THE NORTHERN BALD IBIS IN EUROPE

ANNUAL REPORT 2018



Flight above the Alps during the human-led migration 2018; picture: C Esterer.

Mutters, February 2019

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1. DEMOGRAPHY

At the end of 2018, 102 birds belonged to the migrating release population of Northern Bald Ibises (NBI). The individual assignment to the four breeding colonies is shown in table 1.

66 birds belonged to the generation F0 (founding generation; hand-raised birds), 36 to the generation F1+ (wild birds; born and raised in the wild).

The sex ratio within the population was even (48% female : 52% male).

	Kuchl	Burghausen	Überlingen	Rosegg
juveniles	9	8	29	2
2nd	0	9	9	0
3rd	7	6	0	0
adult	14	9	0	0
total	30	32	38	2
LIFE+	35 (-5)	37 (-5)	GA 38 (0)	

Tab. 1: Demography at the end of 2018: breeding colonies Kuchl (Salzburg, Austria), Burghausen (Bavaria, Germany), Überlingen (Baden-Württemberg, Germany) and Rosegg (Carinthia, Austria); the values in the bottom line indicate the deviation from the actual to the planned numbers according to the LIFE+ Grant Agreement for each colony. As the establishment of a migrating colony in Rosegg was not foreseen in the LIFE+ project, there are no comparative values.

2. BREEDING COLONIES KUCHL AND BURGHAUSEN



Fig. 1: NBI breeding pair sitting in an artificial niche in Kuchl (picture: J Fritz).

In 2018, a total of 21 NBIs returned independently to one of the two breeding areas of Kuchl and Burghausen (tab. 2). As in the

former years, seven non-migrating NBIs were transferred to these areas too in order to promote the breeding success. At the end of the breeding season, these birds were again removed from the colonies.

There were 10 breeding pairs in 2018, which successfully raised 26 NBI chicks, which corresponds to an average of 2.6 chicks per nest.

In 2018, both the numbers of migrating NBIs and the numbers of fledged chicks were higher than ever before, and the trend of the former years is continuing (Fig. 2).

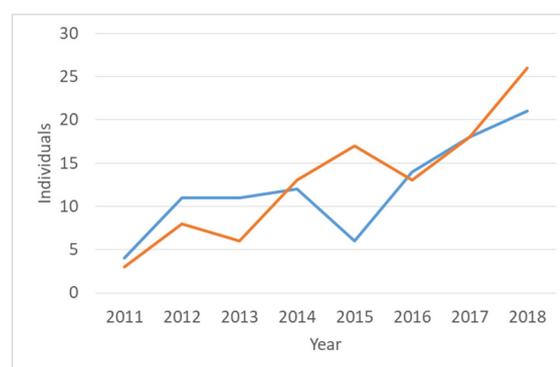


Fig. 2: Migration (blue line) and reproduction (orange line) in annual comparison; the high losses of adult birds in autumn 2014 is clearly indicated.

For the first time, the NBIs belonging to the breeding colony of Kuchl bred in artificial rock niches which were inspired by the natural cliffs of “Georgenberg”. The niches should help the birds on site to habituate to the natural cliffs, where they are expected to breed in the upcoming years. The artificial niches were well accepted by the birds.



Fig. 3: Artificial niches and reconstructed storage hut in Kuchl; picture: J Fritz.

The central and attractive location of the breeding colony in Burghausen in the context of the historic castle is of increasing interest to birdwatchers and promotes the ecotourism in the region. Last year, 822 people visited the breeding site, a significant part of which came to Burghausen especially to see the NBIs.



Fig. 4: First mayor Steindl together with representatives of the city government and the tourism department, presenting the new image book of Burghausen; a part of this book is dedicated to the NBIs; picture: O Habel.

3. MIGRATION OF THE WILD BIRDS

The numbers of independently migrating wild NBIs in spring (N=21) and autumn (N=41) was higher than ever before (tab. 2). Additionally, 22 juvenile birds arrived at the wintering area, and not one bird stayed behind north of the Alps.

	Burghausen	Kuchl	Rosegg	Summe
spring migration	10	11		21
reproduction	12	14		26
	(4 Nester)	(6 Nester)		
reinforcement	2	2		4
juveniles Rosegg			2	2
autumn migration	17	22	2	41
	(8 adult/9 juv)	(11 adult/11juv)	(0ad/2juv)	
not migrated	0	0	0	0
losses	8	4	0	12

Tab. 2: Migration and reproduction; the colony of Überlingen is not considered in this table as the birds are still too young to migrate back to their breeding area to breed; for “reinforcement” see chapter 3, for juveniles Rosegg see chapter 4.

As in the previous years, the birds of both breeding areas were gathering around the airport of Salzburg in September. At the end of October we performed several small-scale transfers to trigger the independent migration towards south. In particular, a group of 13 birds (11 adults and 2 juveniles) were transferred to Sterzing. We’re performing these so-called “induced migrations” since several years in order to avoid that the birds are staying north of the Alps for too long, which in case of a sudden onset of winter would be a great risk. We assume that these interventions won’t be necessary any more in the upcoming years.

A highlight of the last autumn migration was a group of two adult and six juvenile NBIs which flew from the northern brink of the Alps to Southern Tuscany within only two days. On the second day, the birds covered an extraordinary distance of 400 km!

For the first time, we performed a so-called reinforcement in order to optimise the genetic variability within the already existing NBI colonies. Four juvenile birds from Zoo Zurich were released in July. They joined the wild NBIs and two of them arrived at the wintering area.

4. COLONY ROSEGG

Tierpark Rosegg in Carinthia is home to an NBI breeding colony which is kept in free flight during the vegetation period. The majority of chicks that were hand-raised in the course of the LIFE project stems from this colony.

The planning a second LIFE project led to the idea of integrating a growing part of the NBI colony of Rosegg into the release population. From 2020, a variety of measures should ensure that juvenile birds from Rosegg migrated independently to the wintering area.

In October 2018, ten juvenile NBIs from Rosegg left their colony and flew towards south. Shortly after their departure, they were spotted near Rome. At the beginning of December, some of them were seen again in the Abruzzi. Finally, we managed to catch two of them and bring them to the wintering area, where they joined the wild NBIs.

Thus, the establishment of a migratory breeding colony in Rosegg has already started and is expected to continue in 2019.

5. HUMAN-LED MIGRATION

33 NBI chicks stemming from the colonies of Tierpark Rosegg (N=30) and the Konrad Lorenz research station (N=3) were hand-raised by “CorAnne” (C Esterer, AG Schmalstieg) in 2018.



Fig.5: Corinna Esterer and Anne-Gabriela Schmalstieg were hand-raising a group of NBI chicks for the fifth time; picture: J Fritz.

The first hand-raising phase took place at Zoo Vienna. On May 25, the birds were transferred to the training camp in Hödingen near Überlingen at Lake Constance.



Fig. 6: Flight at 2,600 m above sea level across the main alpine ridge; picture: C Esterer.

As in the previous year, the team received great support from the City of Überlingen and the local association “Verein zur Erhaltung der Kulturlandschaft in Hödingen e.V.”. From end of May to the beginning of August, around 2,000 people visited the training camp.

On August 15, the human-led migration began; within two weeks and five flight stages, the team arrived in the wintering area WWF Oasi Laguna di Orbetello (Fig. 7).

The team passed the main alpine ridge within two flight stages. As in the previous year, the formation was again attacked by a golden eagle, but fortunately we didn’t lose any birds. However, during the first stop-over, a fox attacked two of the NBIs; one of them died shortly after the attack. In the end, 29 hand-raised NBIs arrived at the wintering area.

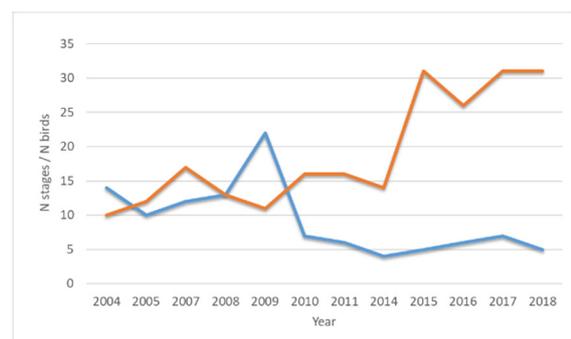


Fig. 7: Improvement of the human-led migrations; the number of flight stages (blue line) was continuously reduced, while the number of birds being guided towards south (orange line) was continuously increased.

6. BASIC RESEARCH

A three-year research project (FWF P30620-BBL), financed by the Austrian Science Fund (FWF) started in June 2018.



Fig. 8: Activation of GPS loggers for the data collection; from left to right: Emanuel Pixner (technical assistant), Elisa Perinot (PhD student) and Helena Wehner (intern); picture: J Fritz.

As part of the research project, the two PhD students Ortal Rewald and Elisa Perinot aim to further explore the costs and benefits of the formation flight using the NBI as model species. The research is supervised at the University of Vienna and the University of Veterinary Medicine Vienna. The scientific management is in the responsibility of Bernhard Völkl of the University of Bern.

The data collection with high-resolution data loggers for the research project was done in the course of the human-led migration.

Furthermore, a variety of prototypes of ICARUS-tags (a new tracking technology) were tested in cooperation with the ICARUS Global Observation System GmbH.

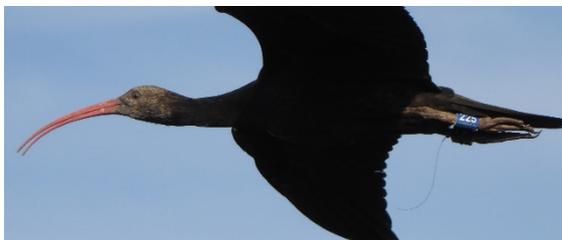


Fig. 9: Prototype of an ICARUS-GPS tag fixed as a leg-ring (ca. 10g); picture: C Esterer.

7. MORTALITY

In 2018, we lost 46 birds. The majority of lost birds were juvenile ones (37%). In 33 cases (72%), the cause of death is known.

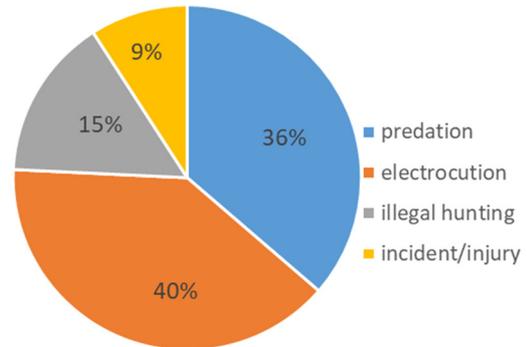


Fig. 10: Mortality causes 2018 (N=33); the 13 cases with unknown cause of death are excluded from the analysis.

Within the 33 mortality cases with known cause, electrocution on unsecured power poles of medium-voltage power lines is the leading cause of death (40%), followed by predation (36%).

Since the beginning of the LIFE project in 2014, the rate of loss from illegal bird hunting is 17% (2018: 15%). This rate is significantly lower than it was before 2014. By implementing comprehensive measures in the course of the LIFE project, we were able to substantially reduce the rate of illegally hunted NBIs in Italy.

If the mortality cases of 2018 are distinguished between the regarding countries, it is evident that illegal hunting is still the major cause for losses (31%) in Italy; in Austria, on the other hand, electrocution causes the majority of deaths within the NBI release population (45%).



Fig. 11: At the end of July, a total of five NBIs died in the course of only two days due to electrocution on an unsecured power pole.

A particularly tragic case of electrocution happened in the municipality of Hochburg-Ach in Upper Austria (Fig. 11). The regarding power pole was provisionally secured immediately by the network provider *Netz Oberösterreich GmbH*. More comprehensive measures to insulate a wider range of power poles in the region is foreseen for the upcoming years. Such measures are also planned in other Austrian regions (Salzburg, Tyrol and Carinthia; see chapter 13).

The NBI is an indicator species in the context of our initiatives against electrocution of large birds in Austria as well as the campaign against illegal bird hunting in Italy. The implemented measures help to protect a variety of bird species.

8. EYE OPACITY & GPS-TRACKING

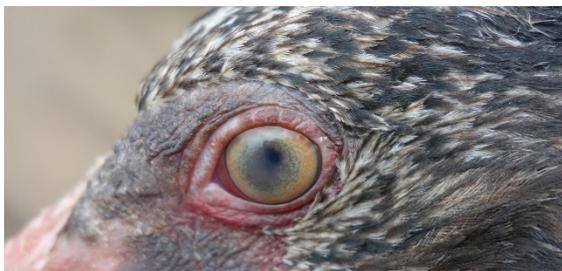


Fig. 12: Advanced state of eye opacity in a juvenile NBI; picture: D Trobe.

In 2018, we registered 10 cases of unilateral corneal opacities in our release population. We are aware of this phenomenon since 2017. The reason for the opacity is still unknown, but it is

evident that it is correlated to the fixing of GPS tags on the upper back of the birds. If the tag is removed or fixed on the lower back of the birds with a leg loop, the eye regenerates rather quickly. If the tag is not removed, it is quite probable that the bird goes blind on the regarding eye.



Fig. 13: A causal connection between the fixing position of the GPS tag and the opacity is evident, given that the birds are sleeping with their heads on their back. Thus, one eye gets in close contact to the tag; picture: D Trobe.

By an appropriate management and an alternative way to fix the GPS tags, we got the situation in the release population under control. Also in this case, the NBI is an indicator species, as we assume that these opacities is also occur in other bird species that are equipped with GPS tags. That's why we keep investigating the phenomenon; furthermore, we're working on a publication on this topic.

9. HERAKLION CONFERENCE (GREECE)

Together with the two LIFE projects *European Network of Prosecutors for the Environment* (ENPE) and *Natura Themis*, the NBI LIFE project organised and hosted an international conference on *Protecting habitats and endangered species in Europe through tackling environmental crime*.



Fig. 14: Participants of the Heraklion conference in October 2018.

104 representatives of 56 organisations and from 25 countries participated in the conference, which took place from October 23-24 in Heraklion (Crete). The delegation of the LIFE NBI project included members of the project team as well as Italian lawyers, prosecutors, forensic scientists, police officers and representatives of several Italian NGOs.

The illegal hunting of endangered species such as the NBI was a key theme of the conference, with presentations on best practice methods in investigation and prosecution as well as innovative approaches and new technologies to tackle environmental crime. The cooperation with ENPE and other organizations will be continued. Our campaign in Italy is increasingly becoming a best practice model in the fight against environmental crime on a European level.

<http://waldrapp.eu/science/conference-crete-2018/>

10. CHICAGO CONFERENCE UND SYMPOSIUM

In November 2018, five members of the NBI project team participated in the *2nd International Wildlife Reintroduction Conference*, hosted and organised by the IUCN Conservation Translocation Specialist Group in Lincoln Park Zoo, Chicago. The team members presented the project with five posters.

The day after the conference, the NBI project team hosted a one-day symposium on *Reintroducing Migratory Birds* in Lincoln Park Zoo.



Fig. 15: Participants of the symposium in Chicago; picture: M Unsöld.

25 participants working with a variety of different bird species like the Whooping Crane

(*Grus americana*), the Asian Houbara (*Chlaydotis macqueeni*), the Orange-bellied Parrot (*Neophema chrysogaster*) or the Aquatic Warbler (*Acrocephalus paludicola*) presented their various projects. The members of the IUCN Conservation Translocation Specialist Group contributed to the very lively discussions.

<http://waldrapp.eu/index.php/en/science/symposium-chicago-2018>

11. REASON FOR HOPE FESTIVAL TIERPARK ROSEGG

On May 12/13, the LIFE project team and Tierpark Rosegg organised and hosted a Reason for Hope festival, which was scheduled to fit the annual World Migratory Bird Day.

The visitors of Tierpark Rosegg had the chance to learn more about the NBI reintroduction project. The programme included an information area, talks, short presentations as well as guided tours to the sedentary NBI colony of Rosegg. The younger visitors were invited to craft their own NBI masks, to learn how to forage like an NBI or to track the birds of the release population with the App *Animal Tracker*.



Fig. 16: During the Reason for Hope festival 2018, the younger visitors had the chance to learn more about the NBI and the reintroduction project; pictures: B Gönner.

12. MEDIA PRODUCTIONS

As in the previous years, the project caused a lot of public and media attention in 2018. The media relations included filming for 13 different TV productions, including National Geographic,

"SternTV" (RTL) or "Theos Tierwelt" (WDR / ARTE).

Furthermore, we registered more than 150 articles in print media, including articles published by Neue Zürcher Zeitung, Spiegel, Yale Environment and The Guardian. In addition, we gave interviews for a series of radio reports, including BBC World.

We published three scientific papers in 2018 (see below) and presented the project in the course of five international congresses.

Spergser et al. (2018): The cultivable autochthonous microbiota of the critically endangered Northern bald ibis (*Geronticus eremita*). PLoS ONE 13(4): e0195255. <https://doi.org/10.1371/journal.pone.0195255>.

Wirtz et al (2018): Optimizing the genetic management of reintroduction projects: genetic population structure of the captive Northern bald ibis population. Conservation Genetics 19/ 4: 853–864.

Fritz et al. (2019) Back into European Wildlife: The Reintroduction of the Northern Bald Ibis (*Geronticus eremita*). Bookchapter in: Scientific Foundations of Zoos and Aquariums: Their Role in Conservation and Research (Allison Kaufman, Meredith Bashaw, Terry Maple Editors), Cambridge University Press; ISBN 978-1-10719919-4.

13. LIFE II PROPOSAL

The current LIFE project ends in December 2019. In 2018, we submitted a comprehensive proposal for a second LIFE project. We expect a decision of the European Commission in spring 2019.

The project, starting in 2020 and ending in 2027, will be implemented by eleven partners from Germany, Austria, Italy and Switzerland. The concept foresees the following four modules:

Module I: Reintroduction of NBIs

Continuation of the establishment of a viable and migrating European NBI population; extension of the breeding areas from three to five breeding colonies.

Module II: Campaign against illegal bird hunting Sustainable reduction of illegal hunting of NBIs and other protected migratory bird species in Italy; development of best-practice approaches

to tackle environmental crime, including the NBI as indicator species.

Module III: Measures against electrocution

Securing power poles of medium-voltage power lines in Austria (Upper Austria, Salzburg, Carinthia and Tyrol) and Italy (Tuscany); initiating protective measures in France.

Module IV: Instant Poaching Alert System (IPAS)

Development and application of an electronic system for a real-time poaching incident notification; to ensure a versatile range of application, large carnivores and vultures as well as the NBI will be included in the development of the device.

14. OBITUARY FOR FABIO PERCO

On February 12 2019, Fabio Perco, a well-known and well-connected Italian ornithologist and ecologist with an inexhaustible passion for nature and wildlife, died.



Fabio was a very dedicated partner and an inexhaustible source of inspiration, especially at the beginning of the NBI reintroduction project.



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